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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Takeyoshi Dohi

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WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER

TANNER, JOCELYN C

ART UNIT

PAPER NUMBER

3731

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/531,994	Applicant(s) DOHI ET AL.	
	Examiner JOCELIN C. TANNER	Art Unit 3731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Amendment filed 5 September 2008.

Claims 1-10 are now pending. The Examiner acknowledges the amendment to claim 10 and the removal of extraneous language in figure 6, therefore the drawing objection has been withdrawn.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 8/1 rejected under 35 U.S.C. 102(e) as being anticipated by Charles et al. (US Patent No. 6,723,106).

3. Regarding claims **1 and 8/1**, Charles et al. discloses a manipulator or “positioning unit” (10) holding a “movable member” (170) having a surgical tool (171) mounted to one end wherein the placement angle of the movable member changes to perform positioning of a distal end of the movable member, including parallel first and second output shafts (238, 258) having distal ends that are pivotably connected by joints (240, 260) to the movable member, the first and second output shafts having the

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capability of reciprocating and linear actuators as drive means (230, 235, 250, 255) (column 2, lines 13-30, Fig. 11).

Regarding the limitation, "for," in the recitation "for giving an arbitrary amount of advance/retraction to the first output shaft and constantly giving to the second output shaft an amount of advance/retraction at a constant ratio ($\neq 1$) with respect to the amount of advance/retraction given to the first output shaft," it is noted that "while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 2 and 8/2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. (US Patent No. 6,723,106) in view of Jensen (US Patent No. 5,800,423).**

6. Regarding claim **2 and 8/2**, Charles et al. discloses all of the limitations previously discussed except for external threads of the first and second output shafts and first and second nuts into which the external threads are threaded.

Jensen teaches members or "output shafts" (14', 15') wherein a portion of the shaft can be provided with lead screws or "external threads" (42, 44). The members (14' and 15') are threaded within the tubular members or "first nut and second nut" (46 and 48) (column 7, lines 19-21, FIG. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the output shafts of Charles et al. with threading and receiving nuts, as taught by Jensen, as another means to provide extension and retraction of members.

7. Claims 3, 4, 8/3 and 8/4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. (US Patent No. 6,723,106) in view of Jensen (US Patent No. 5,800,423), as applied to claim 2 above, and further in view of Falcou et al. (US Patent No. 6,928,894).

8. Regarding claims **3, 4, 8/3 and 8/4**, the combination of Charles et al. and Jensen discloses all of the limitations previously discussed except for different leads of external thread formed in the first and second output shafts and different speeds of rotation of the first and second nut.

Falcou teaches the use of different external thread or "thread pitches" or threads for the deployment of different speeds of actuators (column 6, lines 23-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the output shafts with different thread pitches, as taught by Falcou, and to rotate the output shafts connected to the threads of the

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tubular members or “nuts” in the combination of Charles et al. and Jensen, to provide a mechanism to synchronize or desynchronize the parallel shafts when surgically manipulating in constrained areas.

9. Claims 5 and 8/5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. (US Patent No. 6,723,106) in view of Taylor et al. (US Patent No. 5,397,323).

10. Regarding claims 5 and 8/5, Charles et al. discloses all of the limitations previously discussed. Charles et al. teaches magnet tracks or “racks” (231, 236, 251, 256) having coil units or “pinions” (237, 257) that are engaged within the racks and a corresponding motor (column 20, lines 47-66). However, Charles et al. fails to disclose first and second pinions that are engaged with the racks.

Taylor et al teach center-of-motion or positioning unit including a rolling surfaces or “rack” (605, 606) and roller elements or “pinions” (603, 604) that are used to constrain angle adjustment procedures (Fig. 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the tracks and coil units of Charles et al. with the racks and pinions, as taught by Taylor et al., for the predictable result of restraining rolling and slipping during movement.

11. Claims 6 and 8/6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. (US Patent No. 6,723,106) in view of Taylor et al. (US Patent No.

5,397,323) as applied to claim 5 above, and further in view of Luce et al. (US Patent No. 5,381,196).

12. Regarding claims **6 and 8/6**, the combination of Charles et al. and Taylor et al. discloses all of the limitations previously discussed except for different reference pitches of the racks formed in the first and second output shafts.

Luce et al teaches varying factors of rotational systems, i.e. pitch, a suitable speed and precision can be achieved (column 4, lines 43-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have varied the reference pitch of racks of the positioning device of the combination of Charles et al. and Taylor et al., as taught by Luce et al., for the predictable result of obtaining suitable speeds and precision of each output shaft for enhanced control of the positioning device.

13. Claims 7 and 8/7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. (US Patent No. 6,723,106) in view of Taylor et al. (US Patent No. 5,397,323) as applied to claim 5 above, and further in view of Surdilla (US Patent No. 4,515,296).

14. Regarding claims **7 and 8/7**, the combination of Charles et al. and Taylor et al. discloses all of the limitations previously discussed except for a different speed of rotation of between the first and second pinions.

Surdilla teaches the use of rack and pinions in obtaining different speeds by using a first pinion having 20 teeth and a second pinion having 40 teeth in which the

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rack engages. The second pinion will have to linearly travel twice the distance and velocity traveled by the first pinion, thus producing different speeds.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the known technique of varying the teeth of pinions to the positioning device of the combination of Charles et al. and Taylor et al., as taught by Surdilla, to enhance the control of the positioning device.

15. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. (US Patent No. 6,723,106) in view of Ogawa et al. (US Patent No. 5,577,414).

16. Regarding claims **9 and 10**, Charles et al. discloses a manipulator or “positioning unit” (10) holding a “movable member” (170) having a surgical tool (171) mounted to one end wherein the placement angle of the movable member changes to perform positioning of a distal end of the movable member, including parallel first and second output shafts (238, 258) having distal ends that are pivotably connected by joints (240, 260) to the movable member, the first and second output shafts having the capability of reciprocating and linear actuators as drive means (230, 235, 250, 255) (column 2, lines 13-30, Fig. 11).

Regarding the limitation, “for,” in the recitation “for giving an arbitrary amount of advance/retraction to the first output shaft and constantly giving to the second output shaft an amount of advance/retraction at a constant ratio ($\neq 1$) with respect to the amount of advance/retraction given to the first output shaft,” it is noted that “while

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features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

However, Ogawa et al. fails to disclose a second unit including third and fourth output shafts.

Ogawa et al. teaches a the second unit including "third and fourth output shafts" (2, 3,) having distal ends that are pivotably connected to the casing of a first unit having first and second output shafts (5, 52), output shafts are parallel to each other, the third and fourth output shafts being respectively orthogonal to the first and second output shafts of the first unit; and motor or "drive means" (13) (column 3, lines 1-4, Fig. 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided third and fourth output shafts to the device of Charles et al., as taught by Ogawa et al., to provide more articulation means and assistance in accessing constrained areas.

Response to Arguments

17. Applicant's arguments filed 5 September 2008, with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOCELIN C. TANNER whose telephone number is (571)270-5202. The examiner can normally be reached on Monday through Thursday between 9am and 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Todd Manahan can be reached on 571-272-4713. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jocelin C. Tanner/
12/18/2008
Examiner, Art Unit 3731

/Todd E Manahan/

Supervisory Patent Examiner, Art Unit 3731